



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

January 19, 2011

Mr. Sam Belcher  
Vice President Nine Mile Point  
Nine Mile Point Nuclear Station, LLC  
P.O. Box 63  
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION - NRC INTEGRATED INSPECTION  
REPORT 05000220/2010005 AND 05000410/2010005

Dear Mr. Belcher:

On December 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Nine Mile Point Nuclear Station Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on January 14, 2011, with you and members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

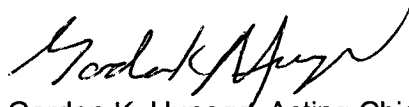
This report documents one self-revealing finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program (CAP), the NRC is treating this as a non-cited violation (NCV), consistent with Section 2.3.2 of the NRC's Enforcement Policy. If you contest the NCV noted in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at Nine Mile Point Nuclear Station.

S. Belcher

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Sincerely,



Gordon K. Hunegs, Acting Chief  
Projects Branch 1  
Division of Reactor Projects

Docket Nos.: 50-220, 50-410  
License Nos.: DPR-63, NPF-69

Enclosure: Inspection Report 05000220/2010005 and 05000410/2010005  
w/Attachment: Supplemental Information

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Sincerely,

/RA/

Gordon K. Hunegs, Acting Chief  
Projects Branch 1  
Division of Reactor Projects

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## U.S. NUCLEAR REGULATORY COMMISSION

## REGION I

Docket No.: 50-220, 50-410

License No.: DPR-63, NPF-69

Report No.: 05000220/2010005; 05000410/2010005

Licensee: Nine Mile Point Nuclear Station, LLC (NMPNS)

Facility: Nine Mile Point, Units 1 and 2

Location: Oswego, NY

Dates: October 1 through December 31, 2010

Inspectors: E. Knutson, Senior Resident Inspector  
K. Kolaczyk, Senior Resident Inspector  
D. Dempsey, Resident Inspector  
T. Setzer, Senior Project Engineer  
J. Furia, Senior Health Physicist  
P. Presby, Senior Operations Engineer  
J. Krafty, Resident Inspector  
J. Hawkins, Project Engineer  
E. Keighley, Project Engineer  
E. Burket, Reactor Inspector  
T. Burns, Reactor Inspector  
T. O'Hara, Reactor Inspector  
S. Chaudhary, Reactor Inspector  
T. Hedigan, Operations Engineer

Approved By: Gordon K. Hunegs, Acting Chief  
Projects Branch 1  
Division of Reactor Projects

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## SUMMARY OF FINDINGS

IR 05000220/2010005, 05000410/2010005; 10/01/2010 - 12/31/2010; Nine Mile Point Nuclear Station, Units 1 and 2; Follow-up of Events.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. One Green finding, which was a non-cited violation (NCV), was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Cornerstone: Initiating Events

- Green. A self-revealing finding of very low safety significance associated with a non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when previously unidentified inadequate electrical connections for two solenoid operated valves (SOVs) in the control air system for the Nine Mile Point Nuclear Station (NMPNS) Unit 1 outboard main steam isolation valves (MSIVs) led to an inadvertent closure of the outboard MSIVs and resultant reactor scram. The SOV electrical connections had not been identified as defective after installation due to inadequate post-maintenance testing. As immediate corrective action, the plant was taken to cold shutdown and an investigation into the cause of the event was commenced. The issue was entered into the corrective action program (CAP) as condition report (CR) 2010-11008.

The finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Additionally, the finding was similar to example 4.b in Appendix E of Inspection Manual Chapter (IMC) 0612, in that it resulted in a reactor scram. The finding was determined to be of very low safety significance in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," based on a Phase 3 analysis. The Region I senior reactor analyst (SRA) evaluated the safety significance of the finding using the Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) and Nine Mile Point Unit One Standardized Plant Analysis Risk (SPAR) models. The finding did not have a cross-cutting aspect because the performance deficiency did not occur within the past three years and therefore was not reflective of present performance. (Section 4OA3)

### Other Findings

None.

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## REPORT DETAILS

### Summary of Plant Status

Nine Mile Point Unit 1 began the inspection period at full rated thermal power (RTP). On November 6, power was reduced to 80 percent for a control rod pattern adjustment and was restored to full RTP later that day. On November 10, Unit 1 automatically scrammed due to inadvertent closure of the outboard main steam isolation valves (MSIVs). A reactor startup was performed on November 13 and full RTP was achieved on November 15. On December 4, power was reduced to 82 percent for a control rod pattern adjustment and to return reactor recirculation pump 12 to service following completion of maintenance on its associated motor-generator (MG). Power was restored to full RTP later that day and remained there for the rest of the inspection period.

Nine Mile Point Unit 2 began the inspection period at full RTP. On October 2, power was reduced to 65 percent to secure the 'A' reactor feedwater pump (RFP) and start the 'C' RFP, perform main steam isolation and turbine valve partial stroke testing, and perform a control rod sequence exchange and single control rod scram time testing. Power was restored to full RTP the following day. On December 11, power was reduced to 65 percent to secure the 'B' RFP and start the 'A' RFP, and to perform main steam isolation and turbine valve partial stroke testing. Power was restored to full RTP later that day and remained there for the rest of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness for Seasonal Extreme Weather Conditions (Two samples)

##### a. Inspection Scope

The inspectors verified the seasonal readiness for Unit 1 and Unit 2 in accordance with NMPNS procedure NAI-PSH-11, "Seasonal Readiness Program," Revision 06. The inspectors verified completion of the operations department cold weather preparation checklists contained in procedures N1-OP-64 and N2-OP-102, "Meteorological Monitoring," Revisions 00400 and 00900, respectively. The inspectors toured selected areas at Unit 1 and Unit 2 to verify cold weather readiness. Additionally, the inspectors assessed the readiness of the following systems that could be susceptible to the effects of cold weather:

- Unit 1 service water (SW) system in the screen well building;
- Unit 1 reactor building ventilation;
- Unit 2 fire water protection system heat tracing; and
- Unit 2 emergency diesel generator (EDG) rooms.

Enclosure

b. Findings

No findings were identified.

.2 Occurrences of Adverse Weather (One sample)

a. Inspection Scope

On November 17, 2010, the inspectors reviewed NMPNS's actions in response to high winds at the station. Both units were alerted to the impending high wind conditions by the station's weather service provider and both prepared for the onset in accordance with their governing procedures, N1-OP-64 and N2-OP-102, "Meteorological Monitoring," Revisions 00400 and 00900, respectively.

Later that day, winds in excess of 50 miles per hour were experienced at the site. Unit 1 experienced repeated brief periods of positive pressure in the reactor and turbine buildings, and responded by placing the respective ventilation system controls in manual and restoring negative pressure in the buildings. Additionally, Unit 1 observed voltage fluctuations on the 115 kilovolt (kV) off site electrical supply system. The magnitude of the perturbations did not require entry into the special operating procedure for grid instability. As a precaution, Unit 1 suspended all surveillance testing that would require entry into a shutdown limiting condition for operation upon a loss of offsite power (LOOP) until the high winds subsided and grid stability was verified. Unit 2 experienced no significant operational effects during the period of high winds.

The inspectors verified that both units implemented actions specified in their respective high wind procedures to minimize the potential impact on the station. The inspectors walked down the outside perimeters of both units to verify that no loose material was present that could pose a wind-born hazard, and reviewed the operators' responses to the event.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdown (71111.04Q - Two samples)

a. Inspection Scope

The inspectors performed partial system walkdowns to verify risk-significant systems were properly aligned for operation. The inspectors verified the operability and alignment of these risk-significant systems while their redundant trains or systems were inoperable or out of service for maintenance. The inspectors compared system lineups to system operating procedures, system drawings, and the applicable chapters in the updated final safety analysis report (UFSAR). The inspectors verified the operability of



critical system components by observing component material condition during the system walkdown.

The following plant system alignments were reviewed:

- Unit 1 EDG 102 and 103 due to increased risk significance while 115 kV offsite power line 1 was out of service for planned maintenance; and
- Unit 2 'A' residual heat removal (RHR) system due to increased risk significance while the Division 2 low pressure emergency core cooling systems were inoperable due to planned maintenance.

b. Findings

No findings were identified.

.2 Complete System Walkdown (71111.04S - One sample)

a. Inspection Scope

The inspectors performed a complete walkdown of the Unit 1 core spray 11 system to identify discrepancies between the existing equipment configuration and that specified in the design documents. During the walkdown, system drawings and operating procedures were used to determine the proper equipment alignment and operational status. The inspectors reviewed the open maintenance work orders (WOs) that could affect the ability of the system to perform its functions. Documentation associated with temporary modifications, operator workarounds, and items tracked by plant engineering were also reviewed to assess their collective impact on system operation. In addition, the inspectors reviewed the condition report (CR) database to verify that equipment alignment problems were being identified and appropriately resolved.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q - Six samples)

a. Inspection Scope

The inspectors toured areas important to reactor safety to evaluate the station's control of transient combustibles and ignition sources, and to examine the material condition, operational status, and operational lineup of fire protection systems including detection, suppression, and fire barriers. The inspectors evaluated fire protection attributes using the criteria contained in Unit 1 UFSAR Appendix 10A, "Fire Hazards Analysis," Unit 2 UFSAR Appendix 9B, "Safe Shutdown Evaluation," and the applicable pre-fire plans. The areas inspected included:

- Unit 1 reactor building (RB) 298 foot elevation;
- Unit 1 containment spray 11 corner room, RB 198 and 218 foot elevations;
- Unit 1 RB 340 foot elevation;
- Unit 2 Division 3 switchgear room, control building 261 foot elevation;
- Unit 2 RB 289 foot elevation; and
- Unit 2 RB 261 foot elevation.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 - One sample)

a. Inspection Scope

The inspectors inspected Unit 2 manhole three, which contains the 4160 volt alternating current (AC) power cables for the high pressure core spray (HPCS) pump. This manhole is susceptible to flooding due to precipitation and ground water infiltration, and is dewatered periodically to prevent the water level from reaching the HPCS pump power cables. During this inspection, the inspectors verified that the water level had not exceeded the level of the HPCS pump power cables prior to dewatering.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T - Three samples)

a. Inspection Scope

Unit 1 Heat Exchanger (One sample)

The inspectors conducted a walkdown of the accessible equipment, structures, and structural supports of the Unit 1 emergency condenser (EC) system. The inspectors also interviewed the responsible system engineer about system operation, reviewed recent system health reports, and reviewed recent system heat removal capacity test reports. Additionally, the inspectors reviewed NMPNS's analysis of a recent reactor scram and initiation of the ECs to ensure that the EC system performed as designed during this event. The inspectors also discussed the operation of the ECs with the shift manager in the Unit 1 control room.

Unit 1 Heat Sink (One sample)

The inspectors reviewed the Unit 1 SW system design to evaluate the adequacy of system monitoring, testing, and maintenance. The SW system was designed to supply cooling water from Lake Ontario to various plant heat loads to ensure a continuous flow of cooling water to systems and components necessary for plant safety during both normal operation and abnormal or accident conditions.

The inspectors reviewed NMPNS's test and inspection, maintenance, chemical control, and performance monitoring methods and frequency for the SW system, to determine whether potential deficiencies could mask degraded performance, and to assess the capability of the systems to perform their design functions. In addition, the inspectors evaluated whether any potential common cause heat sink performance problems could affect multiple heat exchangers or heat removal paths in mitigating systems or could result in an initiating event.

The inspectors reviewed a summary of the 17 design changes completed on the Unit 1 SW system since November 2006. The inspectors reviewed system health reports, SW pipe inspection records, performance and surveillance test results, and design specifications and calculations. The inspectors compared as-found test and inspection results, and performance and surveillance test results, to established acceptance criteria to determine whether the as-found conditions were acceptable and conformed to design basis assumptions for heat transfer capability. The inspectors evaluated performance trends to assess whether the inspection and test frequencies were adequate to identify degradation prior to loss of heat removal capabilities below their design requirements. In addition, the inspectors assessed NMPNS's methods to monitor and control bio-fouling, corrosion, erosion, and silting to verify whether NMPNS's methodology and acceptance criteria, as implemented, were adequate.

The inspectors performed walkdowns of selected, accessible portions of the SW system piping and the intake structure to independently assess the material condition of these systems and components. The inspectors also reviewed recent eddy current test records of safety related heat exchangers cooled by the SW system. The inspectors also discussed system health with the respective system engineers.

Through review of system health reports, and past and present corrective action reports, the inspectors verified proper functioning of traveling screens and strainers, including strainer backwash functions. The inspectors performed a walkdown of the accessible SW system components and for structural integrity of component supports. The inspectors reviewed several videos which showed that NMPNS monitors and controls zebra mussel growth and silt accumulation in SW structures and components.

#### Unit 2 Heat Sink (One sample)

The inspectors reviewed Unit 2 SW system design to evaluate the adequacy of system monitoring, testing, and maintenance. The SW system was designed to supply cooling water from Lake Ontario to various plant heat loads to ensure a continuous flow of cooling water to systems and components necessary for plant safety during both normal operation and abnormal or accident conditions.

The inspectors reviewed a summary of the nine design changes completed on the Unit 2 SW system since November 2006. The inspectors reviewed procedures for a loss of the SW system or ultimate heat sink. The inspectors verified that instrumentation which is relied upon for decision making is periodically calibrated and tested to ensure availability and functionality. The inspectors reviewed controls to prevent clogging due to macrofouling.

The inspectors reviewed NMPNS's test and inspection, maintenance, chemical control, and performance monitoring methods and frequency for the SW system, to determine whether potential deficiencies could mask degraded performance, and to assess the capability of the systems to perform their design functions. In addition, the inspectors evaluated whether any potential common cause heat sink performance problems could affect multiple heat exchangers or heat removal paths in mitigating systems or could result in an initiating event.

The inspectors reviewed system health reports, SW pipe inspection records, performance and surveillance test results, and design specifications and calculations. The inspectors compared as-found test and inspection results, and performance and surveillance test results, to established acceptance criteria to determine whether the as-found conditions were acceptable and conformed to design basis assumptions for heat transfer capability. The inspectors evaluated performance trends to assess whether the inspection and test frequencies were adequate to identify degradation prior to loss of heat removal capabilities below their design requirements. In addition, the inspectors assessed NMPNS's methods to monitor and control bio-fouling, corrosion, erosion, and silting, to verify whether NMPNS's methodology and acceptance criteria, as implemented, were adequate.

The inspectors performed field walkdowns of selected portions of the SW system piping and the intake structure to independently assess the material condition of these systems and components. In addition, the inspectors observed in-progress SW pump bearing maintenance and the removal and cleaning of a SW system discharge filter. The inspectors reviewed the records of recent eddy current tests of safety related heat exchangers cooled by the SW system. The inspectors also discussed system health with the respective system and design engineers.

#### Problem Identification and Resolution

The inspectors reviewed a sample of CRs related to the SW systems to verify that NMPNS was appropriately identifying, characterizing, and correcting problems related to these systems and components, and that the planned or completed corrective actions for the issues were appropriate.

#### b. Findings

No findings were identified.

#### 1R11 Licensed Operator Regualification Program (71111.11)

##### .1 Quarterly Review (71111.11Q - Two samples)

#### a. Inspection Scope

The inspectors evaluated two simulator scenarios in the licensed operator requalification training (LORT) program. The inspectors assessed the clarity and effectiveness of

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communications, the implementation of appropriate actions in response to alarms, the performance of timely control board operation, and the oversight and direction provided by the shift manager. During the scenario, the inspectors also compared simulator performance with actual plant performance in the control room. The following scenarios were observed:

- On October 19, 2010, the inspectors observed Unit 1 LORT to assess operator and instructor performance during a scenario involving a seismic event, failure of the reactor pressure control electronic pressure regulator, failure to scram from an initially high power level, and a small break reactor coolant system leak that led the operators to perform a reactor pressure vessel (RPV) blowdown. The inspectors evaluated the performance of risk significant operator actions including the use of special operating procedures (SOPs) and emergency operating procedures (EOPs).
- On October 19, 2010, the inspectors observed Unit 2 LORT to assess operator and instructor performance during a scenario involving loss of a reactor feed water pump, an oscillation power range monitor automatic scram with failure of the control rods to insert, a reactor recirculation pump seal failure with leakage into the drywell, and a loss of high pressure injection that led operators to perform an RPV blowdown. The inspectors evaluated the performance of risk significant operator actions including the use of SOPs and EOPs.

b. Findings

No findings were identified.

.2 Biennial Review (71111.11B - One sample)

a. Inspection Scope

The following inspection activities were performed using NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program," Appendix A, "Checklist for Evaluating Facility Testing Material," and Appendix B, "Suggested Interview Topics."

A review was conducted of recent operating history documentation found in inspection reports, licensee event reports (LERs), the licensee's corrective action program, and the most recent NRC plant issues matrix. The inspectors also reviewed specific events from the licensee's corrective action program which indicated possible training deficiencies, to verify that they had been appropriately addressed. The senior resident inspector was also consulted for insights regarding licensed operators' performance. These reviews did not detect any operational events that were indicative of possible training deficiencies.

The operating tests for three weeks of the exam cycle (weeks one, two, and three) were reviewed for quality and performance.

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On December 22, 2010, the results of the Unit 1 biennial written examination for 2010 and the annual operating tests for both units for 2010 were reviewed to determine if pass fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, and NRC Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The review verified the following:

#### Unit 1

- Crew pass rates were greater than 80 percent (pass rate was 100 percent);
- Individual pass rates on the dynamic simulator test were greater than 80 percent (pass rate was 100 percent);
- Individual pass rates on the job performance measures (JPMs) of the operating exam were greater than 80 percent (pass rate was 100 percent);
- Individual pass rates on the written exam were greater than 80 percent (pass rate was 97.7 percent); and
- More than 75 percent of the individuals passed all portions of the exam (97.7 percent of the individuals passed all portions of the examination).

One Unit 1 senior reactor operator did not take the 2010 annual operating exam or biennial written exam due to a medical condition.

#### Unit 2

- Crew pass rates were greater than 80 percent (pass rate was 100 percent);
- Individual pass rates on the dynamic simulator test were greater than 80 percent (pass rate was 95.8 percent);
- Individual pass rates on the JPMs of the operating exam were greater than 80 percent (pass rate was 100 percent);
- More than 75 percent of the individuals passed all portions of the exam (95.8 percent of the individuals passed all portions of the examination); and
- No biennial written exam was administered this year on Unit 2.

One Unit 2 reactor operator did not take the 2010 annual operating exam due to a medical condition.

Observations were made of the dynamic simulator exams and JPMs administered during the week of November 15, 2010. These observations included facility evaluations of crew and individual performance during the dynamic simulator exams and individual performance of five JPMs.

The remediation plans for 15 individuals' exam failures over the last two years were reviewed to assess the effectiveness of the remedial training.

Operators, instructors and training/operation's management were interviewed for feedback on their training program and the quality of training received.

Simulator performance and fidelity were reviewed for conformance to the reference plant control room.

A sample of records for requalification training attendance, program feedback, reporting, and medical examinations was reviewed for compliance with license conditions, including NRC regulations.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - Four samples)

a. Inspection Scope

The inspectors evaluated the effectiveness of the maintenance risk assessments required by 10 CFR Part 50.65(a)(4). The inspectors reviewed equipment logs, work schedules, and performed plant tours to verify that actual plant configuration matched the assessed configuration. Additionally, the inspectors verified that risk management actions for both planned and emergent work were consistent with those described in station procedures. The inspectors reviewed risk assessments for the activities listed below.

Unit 1

- Week of October 18, that included securing reactor recirculation pump 12 for maintenance on its associated MG, reactor building closed loop cooling system heat exchanger 12 cleaning, liquid poison system 11 quarterly surveillance, a two day maintenance period for instrument air compressor 13, a one day outage for offsite 115 kV supply line 1, and lake water intake structure cleaning.
- Week of November 29, that included core spray systems 111 and 121 quarterly surveillances, a two day maintenance period for EDG 102, a power reduction to 80 percent for a control rod pattern adjustment and to restore reactor recirculation pump 12 to service following maintenance on its associated MG, and emergent maintenance to troubleshoot and evaluate potentially generic implications of a failure to start of control room emergency ventilation system fan 11.

Unit 2

- Week of November 8, that included a two day maintenance period for the reactor core isolation cooling (RCIC) system including quarterly surveillance, 'C' RHR quarterly surveillance, 'C' SW pump inboard seal replacement, and emergent maintenance to replace a Division 1 under voltage trip relay and to troubleshoot flow oscillations from the 'C' reactor feedwater pump flow control valve.
- Week of November 29, that included installation and testing of a SW to fire water system cross-connect modification to the Division 3 EDG, a two day maintenance period for off-site 115 kV supply line 5, calibration of the average power range

monitor system using the traversing incore probe system, and maintenance and testing of the SW sub-systems cross-connect valves.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15 - Six samples)

a. Inspection Scope

The inspectors evaluated the acceptability of operability evaluations, the use and control of compensatory measures, and compliance with technical specifications (TSs). The evaluations were reviewed using criteria specified in NRC Regulatory Issue Summary 2005-20, "Revision to Guidance Formerly Contained in NRC Generic Letter (GL) 91-18, 'Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability,'" and Inspection Manual Part 9900, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety." The inspectors' reviews included verification that the operability determinations were made as specified by Procedure CNG-OP-1.01-1002, "Conduct of Operability Determinations / Functionality Assessments." The technical adequacy of the determinations was reviewed and compared to the TSs, UFSAR, and associated design basis documents (DBDs). The following evaluations were reviewed:

- CR 2010-9886 concerning high motor operator running load identified during diagnostic testing of Unit 1 drywell purge isolation valve IV-201-09;
- CR 2010-2047 concerning a failed pressure drop test on Unit 1 containment nitrogen purge valve BV-201-22;
- CR 2010-10264 concerning installation of a trip unit in the Unit 1 analog trip system that did not meet all environmental qualification requirements;
- CR 2010-10795 concerning failure of a Unit 2 Division 2 EDG emergency start relay to reset;
- Engineering Change Package (ECP) 10-000913 concerning the effect on Unit 2 RCIC system operability of a change to reduce the potential for fouling in the steam exhaust drain pot subsystem by removing the internals of check valve 2ICS\*V36 and modifying the size of orifice 2ICS\*RO155 to full bore; and
- CR 2010-11626 concerning previously unaccounted for dilution that would occur during Unit 2 standby liquid control (SLC) system injection due to input from the keep-fill system, and its effect on SLC system operability.

b. Findings

No findings were identified.



1R18 Plant Modifications (71111.18).1 Temporary Modifications (One sample)a. Inspection Scope

The inspectors reviewed a Unit 2 temporary plant modification to jumper across the indexer limit switch (S2) in the indexing mechanism of the 'A' traversing in-core probe (TIP) machine to allow continued use of the TIP machine until S2 can be replaced during the next scheduled refueling outage. The modification was implemented through ECP-10-000698. The change was necessary because S2 had failed, making the 'A' TIP machine inoperable. The temporary modification was installed to avoid the significant dose that would be incurred during repair or replacement of S2 while the plant was operating at power.

The inspectors reviewed the 10 CFR Part 50.59 screening against the system design bases documentation to verify that the modification did not affect system operability. The inspectors verified the adequacy of acceptance testing and performed a schematic verification of the installed temporary modification. The inspectors also reviewed Unit 2 operating procedures involving TIP machine and drive control unit, and the vendor technical manual to verify that the modification would not adversely impact plant operations and that UFSAR-required system operating parameters would be maintained.

b. Findings

No findings were identified.

.2 Permanent Modifications (One sample)a. Inspection Scope

The inspectors reviewed Unit 2 permanent plant modification ECP-10-000291, "HPCS Diesel Cooling Water Cross-Tie to Fire Water for PRA Improvement." The purpose of this change was to make the fire water system available to provide cooling water to the Division 3 (HPCS) EDG during a station blackout (when normal cooling from the SW system would be unavailable), thereby allowing the EDG to be used to power either Division 1 or Division 2 loads. The inspectors interviewed the system engineer, reviewed the applicable design documentation and 10 CFR Part 50.59 screening, and walked down the modification to verify that the modification would not negatively impact the design basis of the SW system.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 - Seven samples)a. Inspection Scope

The inspectors reviewed the post-maintenance tests (PMTs) listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with information in the applicable licensing basis and/or DBDs, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data, to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Unit 1, WO C09055990 to replace the diaphragm and perform diagnostic testing of torus nitrogen makeup isolation valve 201.2-33. The PMT was to verify seat tightness in accordance with N1-ISP-LRT-TYC, "Type 'C' Containment Isolation Valve Leak Rate Test," Attachment 57, Revision 00500.
- Unit 1, WO C91050668 to troubleshoot and repair a high resistance connection on an excitation relay for EDG 102. The PMT was to verify normal relay conditions by running the EDG in parallel with the offsite power source in accordance with N1-OP-45, "Emergency Diesel Generators," Revision 03100.
- Unit 1, WO C08012630 to replace the actuator on the containment spray bypass to torus valve for loop 111, BV 80-40. The PMT was to stroke time the valve in accordance with N1-ST-R11, "Valve Remote Position Indication Verification," Revision 01601.
- Unit 1, WOs C91065885 and C91065886 to replace reactor vessel isolation relays 12K73 and 12K74, respectively. The PMT was to verify proper operation of the relays in accordance with instructions in the WOs and N1-ISP-036-004, "Low-Low Reactor Level Instrument Trip Channel Test/Calibration," Revision 00201.
- Unit 1, WO C91065884 to repair electrical connectors for solenoid operated valves (SOVs), SOV-01-03D and SOV-01-04D (control air SOVs for MSIVs 01-03 and 01-04). The PMT was to verify continuity through the connectors, measure the SOV coil resistances, and cycle MSIVs 01-03 and 01-04 in accordance with the instructions in WO C91065883.
- Unit 2, WO C90957699 to replace relay 27AC-2ENSA24, undervoltage relay for switchgear 2ENS\*SWG101 phase 3. The PMT was to verify the trip and reset capability of the relay in accordance with N2-OSP-ENS-M001, "4.16 KV Emergency Bus Under and Degraded Voltage Functional Test," Revision 00301.
- Unit 2, WO C91012711 to repack the outboard shaft seal of the 'B' SW pump. The PMT was to verify proper pump operation in accordance with N2-OSP-Q002, "Service Water Pump and Valve Operability Test," Revision 01200.

Enclosure

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 - One sample)

a. Inspection Scope

The inspectors observed and reviewed the following activities during the Unit 1 forced outage from November 10 through November 13, 2010.

The inspectors observed portions of the plant shutdown and verified that the TS requirements with respect to reactor coolant system (RCS) cooldown limitations were satisfied. The inspectors reviewed outage schedules and procedures, and verified that TS-specified safety system availability was maintained and that shutdown risk was considered.

The inspectors observed portions of the reactor startup following the outage, and verified through control room observations, discussions with personnel, and log reviews that safety-related equipment specified for mode change was operable.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 - Five samples)

a. Inspection Scope

The inspectors witnessed performance of and/or reviewed test data for risk-significant surveillance tests (STs) to assess whether the components and systems tested satisfied design and licensing basis requirements. The inspectors verified that test acceptance criteria were clear, demonstrated operational readiness and were consistent with the DBDs; that test instrumentation had current calibrations and the range and accuracy for the application; and that tests were performed, as written, with applicable prerequisites satisfied. Upon test completion, the inspectors verified that equipment was returned to the status specified to perform its safety function.

The following STs were reviewed:

- N1-ST-C9, "Control Room Emergency Ventilation System Operability Test," Revision 01501;
- N1-ST-Q8A, "Liquid Poison Pump 11 and Check Valve Operability Test," Revision 00400;
- Reactor water chemistry analyses for Units 1 and 2, performed in accordance with N1-CSP-D100, "Reactor Coolant Chemistry," Revision 01000, and N2-CSP-GEN-

D100, "Reactor Water / Auxiliary Water Chemistry Surveillance," Revision 5, respectively;

- N1-ISP-036-006, "Emergency Cooling System - High Steam Flow Instrument Trip Channel Test/Calibration," Revision 00501; and
- N2-OSP-ICS-Q@002, "RCIC Pump and Valve Operability Test and System Integrity Test and ASME XI Functional Test," Revision 00900.

This represented a total of five inspection samples, of which two were Routine Surveillances, two were In-Service Testing, and one was a Reactor Coolant System Leakage Detection Surveillance as defined by Inspection Procedure 71111.22.

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

1EP6 Drill Evaluation (71114.06 - One sample)

a. Inspection Scope

The inspectors observed Unit 1 simulator activities associated with licensed operator requalification training on October 19, 2010. The scenario consisted of a seismic event and failure to scram with small break loss of coolant accident leading to an RPV blowdown. The inspectors verified that emergency classification declarations and simulated notifications were completed in accordance with 10 CFR Part 50.72, 10 CFR Part 50, Appendix E, and Nine Mile Point emergency plan implementing procedures.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational/Public Radiation Safety**

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - One sample)

a. Inspection Scope

Instructions to Workers

The inspectors reviewed occurrences where a worker's electronic personnel dosimeter noticeably malfunctioned or alarmed. The inspectors verified that workers responded appropriately to the off-normal condition. The inspectors verified that the issue was included in the CAP and dose evaluations were conducted as appropriate.

### Contamination and Radioactive Material Control

The inspectors selected sealed sources from the licensee's inventory records that present the greatest radiological risk. The inspectors verified that sources were accounted for and had been verified to be intact.

The inspectors verified that no transactions involving nationally tracked sources were reported in accordance with 10 CFR Part 20.2207 in 2010.

### Radiation Protection Technician Proficiency

During job performance observations, the inspectors observed the performance of the radiation protection technicians with respect to radiation protection work requirements. The inspectors determined that technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits, and that their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors determined that there was no observable pattern traceable to a similar cause. The inspectors determined that this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

### Problem Identification and Resolution

The inspectors verified that problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee CAP. In addition to the above, the inspectors verified the appropriateness of the corrective actions for a selected sample of problems documented by NMPNS that involve radiation monitoring and exposure controls. The inspector determined that the licensee was assessing the applicability of operating experience to their plants.

#### b. Findings

No findings were identified.

### 2RS4 Occupational Dose Assessment (71124.04)

#### a. Inspection Scope

##### Internal Dosimetry - Routine Bioassay

The inspectors reviewed procedures used to assess dose from internally deposited nuclides using whole body counting equipment. The inspectors verified that the procedures addressed methods for determining if an individual was internally or

externally contaminated, the release of contaminated individuals, the determination of entry route and assignment of dose.

The inspectors verified that the frequency of such measurements was consistent with the biological half-life of the potential nuclides available for intake.

The inspectors evaluated the minimum detectable activity (MDA) of the instrument. The inspectors determined that the MDA was adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors verified that the system used in each bioassay had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors verified that the appropriate nuclide library was used. The inspectors verified that any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition.

#### Internal Dosimetry - Special Bioassay

The inspectors selected internal dose assessments obtained using in-vitro monitoring. The inspectors reviewed and assessed the adequacy of the licensee's program for in-vitro monitoring of radionuclides, including collection and storage of samples.

The inspectors reviewed the licensee's audits of the vendor laboratory. The inspectors verified that the laboratory participated in an analysis cross-check program and that out-of-tolerance results were evaluated and resolved appropriately.

The inspectors reviewed the adequacy of the licensee's program for dose assessments based on airborne/derived air concentration (DAC) monitoring. The inspectors verified that flow rates and/or collection times for fixed head air samplers or lapel breathing zone air samplers were adequate to ensure that appropriate lower limits of detection are obtained. The inspectors reviewed the adequacy of procedural guidance used to assess dose when the licensee applies protection factors. The inspectors reviewed dose assessments performed using airborne/DAC monitoring. The inspectors verified that the licensee's DAC calculations were representative of the actual airborne radionuclide mixture, including hard-to-detect nuclides.

The inspectors reviewed the adequacy of the licensee's internal dose assessments for any actual internal exposure greater than 10 millirem (mrem) committed effective dose equivalent. The inspectors determined that the affected personnel were properly monitored with calibrated equipment and the data was analyzed and internal exposures properly assessed in accordance with licensee procedures.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08 - One sample)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the UFSAR, the Process Control Program (PCP), and the recent radiological effluent release report for information on the types, amounts, and processing of radioactive waste disposed. Additionally, the inspectors reviewed the scope of any quality assurance (QA) audits in this area since the last inspection.

Radioactive Material Storage

The inspectors selected areas where containers of radioactive waste were stored, and verified that the containers were labeled in accordance with 10 CFR Part 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR Part 20.1905, "Exemptions to Labeling Requirements," as appropriate.

The inspectors verified that the radioactive materials storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20, "Standards for Protection against Radiation." For materials stored or used in the controlled or unrestricted areas, the inspectors verified that they were secured against unauthorized removal and controlled in accordance with 10 CFR Part 20.1801, "Security of Stored Material," and 20 CFR Part 1802, "Control of Material Not in Storage," as appropriate.

The inspectors verified that the licensee has established a process for monitoring the impact of long-term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements. The inspectors selected containers of stored radioactive materials, and verified that there were no signs of swelling, leakage, or deformation.

Radioactive Waste System Walkdown

The inspectors selected liquid and solid radioactive waste processing systems, and walked down accessible portions of systems to verify and assess that the current system configuration and operation agree with the descriptions in the UFSAR, offsite dose calculation manual, and PCP.

The inspectors selected radioactive waste processing equipment that was not operational and/or was abandoned in place, and verified that the licensee had established administrative and/or physical controls to ensure that the equipment will not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors verified that NMPNS has reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR Part 50.59, "Changes, Tests, and Experiments."

The inspectors reviewed the adequacy of any changes made to the radioactive waste processing systems since the last inspection. The inspectors verified that changes from what is described in the UFSAR were reviewed and documented in accordance with 10 CFR Part 50.59, as appropriate.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers. The inspectors verified that the waste stream mixing, sampling procedures, and methodology for waste concentration averaging were consistent with the PCP, and provided representative samples of the waste product for the purposes of waste classification as described in 10 CFR Part 61.55, "Waste Classification."

For those systems that provide tank recirculation, the inspectors verified that the tank recirculation procedure provides sufficient mixing.

The inspectors verified that the licensee's PCP correctly describes the current methods and procedures for dewatering and waste.

#### Waste Characterization and Classification

The inspectors selected radioactive waste streams, and verified that NMPNS's radiochemical sample analysis results were sufficient to support radioactive waste characterization as required by 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The inspectors verified that NMPNS's use of scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analyses.

For the waste streams selected above, the inspectors verified that changes to plant operational parameters are taken into account to (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update, and (2) verify that waste shipments continue to meet the requirements of 10 CFR Part 61.

The inspectors verified that the licensee had established and maintained an adequate QA program to ensure compliance with the waste classification and characterization requirements of 10 CFR Part 61.55 and 10 CFR Part 61.56, "Waste Characteristics."

#### Shipment Preparation

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and NMPNS's verification of shipment readiness. The inspectors verified that the requirements of any applicable transport cask certificate of compliance had been met. The inspectors verified that the receiving licensee was authorized to receive the shipment packages.

The inspectors observed radiation workers during the conduct of radioactive waste processing, and radioactive material shipment preparation and receipt activities. The inspectors verified that the shippers were knowledgeable of the shipping regulations and



that shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to NMPNS's response to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979, and 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training." The inspectors verified that NMPNS's training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

#### Shipping Records

The inspectors selected non-excepted package shipment records and verified that the shipping documents indicated the proper shipper name, emergency response information and a 24-hour contact telephone number, accurate curie content and volume of material, and appropriate waste classification, transport index, and United Nations number. The inspectors verified that the shipment placarding was consistent with the information in the shipping documentation.

#### Problem Identification and Resolution

The inspectors verified that problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by NMPNS at an appropriate threshold, were properly characterized, and were properly addressed for resolution in the CAP. The inspectors verified the appropriateness of the corrective actions for a selected sample of problems documented by NMPNS that involve radioactive waste processing, handling, storage, and transportation.

The inspector reviewed the results of selected audits performed since the last inspection of this program and evaluated the adequacy of NMPNS's corrective actions for issues identified during those audits.

#### b. Findings

No findings were identified.

### **4. OTHER ACTIVITIES**

#### 4OA1 Performance Indicator Verification (71151 - Nine samples)

##### a. Inspection Scope

The inspectors sampled NMPNS submittals for the performance indicators (PIs) listed below. To verify the accuracy of the PI data reported during that period, the PI definition guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 6, was used to verify the basis in reporting for each data element.

### Cornerstone: Mitigating Systems

The inspectors reviewed NMPNS's submittals for the mitigating system performance index (MSPI) listed below to determine the accuracy and completeness of the reported data. The review was accomplished by comparing the reported PI data to plant records and information available in plant logs, CRs, system health reports, the respective MSPI Basis Documents, and NRC inspection reports. Operating data for the period of July 2009 through September 2010 were reviewed to complete this inspection.

- Unit 2 emergency AC power system;
- Unit 2 high pressure injection system;
- Unit 2 heat removal system;
- Unit 2 RHR system; and
- Unit 2 cooling water systems.

Additionally, the inspectors reviewed Unit 1 and Unit 2 10 CFR Part 50.73 LERs, issued between the end of the third quarter 2009 and the end of the third quarter 2010, for safety system functional failures.

### Cornerstone: Occupational/Public Radiation Safety

The inspectors reviewed all licensee PIs for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed a listing of licensee action reports for the period January 1, 2010, through November 15, 2010, for issues related to the occupational radiation safety performance indicator, which measures non-conformances with high radiation areas greater than one rad per hour (R/hr) and unplanned personnel exposures greater than 100 mrem total effective dose equivalent (TEDE), 5 rem skin dose equivalent (SDE), 1.5 rem lens dose equivalent (LDE), or 100 mrem to the unborn child.

The inspectors reviewed a listing of licensee action reports for the period January 1, 2010, through November 15, 2010, for issues related to the public radiation safety PI, which measures radiological effluent release occurrences per site that exceed 1.5 mrem/quarter (qtr) whole body or 5 mrem/qtr organ dose for liquid effluents; or 5 millirad (mrad)/qtr gamma air dose, 10 mrad/qtr beta air dose; or 7.5 mrem/qtr organ doses from iodine-131, iodine-133, hydrogen-3, and particulates for gaseous effluents.

The inspectors determined that no PI events had occurred during the assessment period.

#### b. Findings

No findings were identified.

#### 4OA2 Problem Identification and Resolution (71152 - Seven samples)

##### .1 Review of Items Entered into the Corrective Action Program (CAP)

###### a. Inspection Scope

As specified by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into NMPNS's CAP. In accordance with the baseline inspection procedures, the inspectors also identified selected CAP items across the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones for additional follow-up and review. The inspectors assessed the threshold for problem identification, the adequacy of the cause analyses, extent of condition review, operability determinations, and the timeliness of the specified corrective actions.

###### b. Findings

No findings were identified.

##### .2 Semi-Annual Review to Identify Trends (One sample)

###### a. Inspection Scope

The inspectors performed a semi-annual review of site issues, to identify trends that might indicate the existence of more significant safety issues, as required by Inspection Procedure 71152, "Identification and Resolution of Problems." The inspectors included in this review, repetitive or closely-related issues that may have been documented by NMNPS outside of the CAP, such as trend reports, QA assessment reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed the NMPNS CAP database for the third and fourth quarters of 2010, to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily CR review (Section 4OA2.1).

###### b. Findings and Observations

No findings were identified. In general, NMNPS has identified trends and has appropriately addressed the trends with their CAP. However, the inspectors identified two trends that had not previously been recognized. The first trend involved the discovery of microbiologically induced corrosion in the SW system during aging management inspections at Units 1 and 2. Specifically, since the start of the calendar year, over 80 CRs have been written that documented this condition. However this trend had not been assessed in the CR database. Additionally during this time, over 50 CRs have reported the discovery of roof leakage in various building at NMNPS.

However similar to the first trend, this adverse trend had not been reviewed or assessed for significance in the NMNPS CAP.

NMNPS initiated CR 2011-00164 to document the identified trend in aging management. A CR was not initiated to document the trend concerning roof leakage since NMNPS personnel believed sufficient attention and focus was placed on this issue.

.3 Annual Samples - Unit 1 and Unit 2 Operator Workarounds (Two samples)

a. Inspection Scope

The inspectors reviewed the Unit 1 and 2 operator workarounds, operator burdens, and items tracked on their Operational Focus Index. The review focused on the reliability and availability of mitigating systems, with particular focus on issues that had the potential to affect the ability of operators to respond to plant transients and events. The inspectors reviewed applicable procedures in order to determine if NMPNS was following these procedures. The inspectors also interviewed Operations department personnel to determine their knowledge of selected workarounds and the associated compensatory actions.

b. Findings and Observations

No findings were identified. NMPNS tracks operator workarounds and burdens in the maintenance WO system. Workarounds are also tracked on the shift turnover/information sheet. The unit workaround coordinator performs a quarterly aggregate impact review to determine the combined impact of all workarounds and burdens on the ability of the on-shift personnel to perform their duties during normal plant operations and to respond to off-normal, emergency, and transient conditions. The Operations department also tracks several other items in their Operational Focus Index, including control room deficiencies, control room defeated annunciators, and operability determinations. The items are weighted and the combined value is graded as green, white, yellow, or red in order to provide additional focus and resources if index color degrades.

As noted above, operator burdens are only tracked in the WO system, and knowledge of the current burdens and impacts is not well established among many of the Operations department personnel.

.4 Annual Sample - Reactor Feedwater Pump 13 Feedwater Control System Modification Functional Testing (One sample)

a. Inspection Scope

The inspectors reviewed the Unit 1 reactor feed pump 13 feedwater control system modification functional test. The purpose of the review was to determine if vulnerabilities in the Quick Trak II feedwater control system, identified as a result of the reactor scram on October 5, 2009, had been addressed and adequately tested. The

inspectors reviewed the test procedure and results, reviewed applicable CRs, interviewed the system and design engineers, and walked down the system as part of the inspection.

b. Findings and Observations

No findings were identified. The testing demonstrated that the "Excess Friction" error, that prevented the automatic transfer from the lead feedwater controller to the standby controller on October 5, 2009, would now properly transfer control to the standby controller. Recent operating experience also identified that a Quick Trak II micro-processor lock-up caused one site to lose the ability to control the feedwater regulating valve in either automatic or manual. NMPNS is currently pursuing a modification that would install a software change to warn the operators of a problem with the feedwater controller and install a transfer switch in the control room to enable a manual swap to the standby positioner.

.5 Annual Sample - Human Performance Issues Associated with the January 7, 2010, Unit 2 Scram (One sample)

a. Inspection Scope

This inspection was to assess NMPNS's identification, evaluation, and resolution of the issue documented in CR 2010-0192. Specifically, on January 7, 2010, at 0100, with Unit 2 operating at 100 percent power, an automatic Alternate Rod Insertion (ARI) occurred resulting in an unplanned plant shutdown. The event occurred concurrent with an ongoing maintenance activity that involved filling and venting of an RHR system differential pressure transmitter. Technicians performing the venting were unaware that the high side of the transmitter was also connected to transmitters associated with the redundant reactivity control system (RRCS). When the high side drain valve of the transmitter was opened and then closed, it caused a perturbation in the common sensing line of the RPV instrumentation for reactor water level. The perturbation caused the RRCS to initiate an ARI scram signal, which caused a trip of the reactor recirculation pumps and an automatic Unit 2 reactor shutdown.

The inspection focused on NMPNS's problem identification, evaluation, and resolution of issues associated with the above event. The inspectors reviewed the root cause analysis and corrective actions assigned to various departments for resolution. The inspectors focused on human performance issues that were causal to the event, and the extent of cause/condition documented in the report. Internal and external operating experience included in the root cause analysis were reviewed to determine if NMPNS had appropriately considered similar events in the industry to capture lessons learned. The inspectors reviewed records of personnel interviews and statements, and reviewed NMPNS's event and causal factor analysis to verify that the cause of the event had been identified, and appropriate corrective actions were assigned. Finally, the inspectors reviewed the Unit 2 TS and UFSAR.

b. Findings and Observations

No findings were identified. The inspectors determined that NMPNS had performed a complete and accurate identification of the problem in a timely manner, commensurate with the issue's safety significance. Operability and reportability issues were appropriately evaluated and documented. NMPNS adequately considered extent of condition, extent of cause, generic implications, common cause, and previous occurrences in the root cause report. The prioritization of the problem's resolution through the assignment of corrective actions was determined to be timely and commensurate with the safety significance of each corrective action.

The inspectors determined that NMPNS appropriately arrived at root and contributing causes to the event. Significant conditions adverse to quality and the corrective actions to prevent recurrence were documented and reported to appropriate levels of management. Corrective actions were specific, measurable, and focused on correcting the problem. Due dates assigned to each corrective action were appropriate. Immediate corrective actions taken to correct the problem and prevent recurrence were determined to be adequate and effective. Finally, the inspectors determined that NMPNS appropriately used both internal and external operating experience, and communicated lessons learned to site employees, including multiple levels of management, to avoid similar human performance issues in the future.

.6 Annual Sample - Effectiveness of Corrective Actions for the Negative Trend in Procedure Compliance (One sample)

a. Inspection Scope

The purpose of this inspection was to evaluate the effectiveness of corrective actions for the negative trend in procedure compliance that was identified in CRs 2009-0548, -2238, -3465, -7964, -8395, and -8503. These CRs were selected for review because they identified operational problems at both units that shared a common cause determination of human performance. The analyses characterized the issues as indicative of a declining performance in procedure compliance over a six month period in 2009.

The inspectors evaluated the adequacy of the cause analysis, extent of condition review, operability and reportability determinations, and the timeliness of the specified corrective actions. The inspectors interviewed responsible personnel involved in the development of the apparent cause evaluation and those who provided input for the subsequent corrective action. Interviews were also conducted with operations, performance improvement, and licensing personnel to determine the extent of the investigation of operator actions surrounding the events.

b. Findings and Observations

No findings were identified. The inspectors noted that NMPNS performed appropriate reportability and operability assessments as part of their disposition of the listed CRs.

The inspectors determined that the extent of condition investigations appropriately examined other areas where the same problems were likely to occur. In each evaluation, the problem was characterized as being related to human performance failures; specifically, a failure to follow approved procedures, or an interpretation of procedure requirements without a clear basis. In view of the nature of human performance issues, the corrective actions applied were prompt and focused on an increase in individual responsibility and accountability. NMPNS initiated additional training and increased oversight, with emphasis on procedure understanding and compliance.

.7 Annual Sample - Actions Taken to Prevent Water Hammer in the Unit 2 RHR System (One sample)

a. Inspection Scope

This inspection was conducted to assess NMPNS's corrective actions associated with issues addressed in CRs 2009-0858 and 2009-0917. Specifically, the inspectors reviewed actions taken to address the potential for a water hammer event to occur in the Unit 2 RHR system if a concurrent LOOP event and loss-of-coolant accident (LOCA) were to occur with RHR initially in operation and discharging to the suppression pool. The concern was drain down from the higher elevation piping to the suppression pool which would create voiding in the piping and water hammer susceptibility upon pump restart when the EDGs re-energize the bus.

In particular, the inspectors reviewed the corrective actions NMPNS implemented regarding the position of the RHR minimum flow valves. The minimum flow valves are normally open unless their associated pump is running. Since the 'B' and 'C' minimum flow valves share a common discharge line, NMPNS added a procedural precaution to close the 'C' RHR minimum flow valve while the 'B' RHR pump is aligned for suppression pool cooling to preclude the potential for void transfer to the 'C' RHR loop in the event of a LOOP/LOCA. Additionally, precautions were added to the RHR operating procedure to close the associated minimum flow valves while suppression pool injection valves were being stroked for maintenance.

The inspectors reviewed procedures, drawings, WOs, CRs, and related industry operating experience to assess the effectiveness of NMPNS's corrective actions. The inspectors also discussed the corrective actions with station personnel and conducted a walkdown of accessible portions of the RHR system.

b. Findings and Observations

No findings were identified. The inspectors determined that NMPNS's actions associated with addressing the potential for a water hammer event to occur in the RHR system were reasonable to correct the identified causes. For the CRs reviewed, the associated evaluations were appropriately detailed to identify apparent and/or root causes and to develop suitable corrective actions.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 - One sample)

.1 Unit 1 Reactor Scram Due to Inadvertent Closure of the Outboard Main Steam Isolation Valves

a. Inspection Scope

On November 10, 2010, NMP Unit 1 automatically scrammed from 100 percent power due to closure of the two outboard MSIVs. Immediately suspect as the cause of the MSIV closure was an instrument surveillance to test the RPV low-low level reactor protection system (RPS) trip that was in progress at the time (for Unit 1, the MSIVs automatically close on low-low RPV level). However, it was not obvious why only the outboard MSIVs (as opposed to all) had closed. The cause was later determined to be a combination of three component malfunctions in the RPV isolation portion of the RPS.

Operators responded in accordance with the applicable emergency and special operating procedures. The high pressure coolant injection (HPCI) system initiated as designed due to the transient low RPV water level following the scram. Operators reset the HPCI initiation signal and took manual control of RPV water level. Operators utilized one loop of the emergency cooling system for RPV pressure control until the MSIVs could be reopened to reestablish availability of the normal heat sink. A normal cool down was performed and cold shutdown was achieved the following day.

The inspectors responded to the control room and observed operators' responses to the event. The inspectors verified that operators responded in accordance with the applicable procedures. The inspectors confirmed that no emergency plan emergency action level thresholds had been exceeded and that the event was appropriately reported to the NRC.

The inspectors reviewed the circumstances surrounding the event. The inspectors monitored startup preparation activities and corrective actions through attendance at outage update meetings, discussions with plant personnel, and review of records, including the post-scram review.

b. Findings

Introduction. A self-revealing finding of very low safety significance (Green) associated with an NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on November 10, 2010, when previously unidentified inadequate electrical connections for two SOVs in the control air system for the Unit 1 outboard MSIVs led to an inadvertent closure of the outboard MSIVs and resultant reactor scram. The electrical connections had not been identified as defective after installation due to inadequate post-maintenance testing.

Description. On November 10, 2010, Instrument and Controls technicians were performing quarterly surveillance test N1-ISP-036-004, "Low-Low Reactor Level Instrument Trip Channel Test/Calibration," Revision 00201, on RPS channel 11-1. During this test, a low-low reactor level signal would be input to RPS channel 11-1 to



simulate a trip condition and deenergize the logic circuit. This would also open contacts in the RPS channel 11 and 12 power supplies to the associated reactor vessel isolation valves, which close when deenergized. However, this condition would not cause a loss of power to the valves, because parallel contacts in an RPS channel 12-1 relay would maintain both power supplies energized.

On this occasion, however, a component malfunctioned in that RPS channel 12-1 relay had caused its parallel contact in the RPS channel 12 power supply to develop a high resistance. As a result, when the low-low reactor level test signal was input to RPS channel 11-1, the RPS channel 12 power supply to the reactor vessel isolation valves deenergized. Although not expected, this malfunction should not have had any operational consequence; only one RPS power supply is required to maintain the valves open, and the channel 11 RPS power supply remained energized.

However, a previously undetected problem existed with two SOVs in the control air system for the air operated (outboard) MSIVs, 01-03 and 01-04. The MSIV control air system contains two SOVs, one powered from each RPS channel. For an MSIV to open, only one of the SOVs need be energized, whereas both SOVs must deenergize for the MSIV to close. In this case, the two SOVs associated with RPS channel 11 (one for each of the outboard MSIVs) had been replaced in April 2005, and one of the environmentally qualified (EQ) electrical connectors to each SOV had not been properly made, such that an open circuit existed. The PMT had been to open the MSIVs, but this had been done with both RPS channels energized; since the RPS channel 12 SOVs were energized and functioning properly, this test did not reveal that the RPS channel 11 SOVs were not receiving power.

As a result, when loss of the RPS channel 12 power supply caused the RPS channel 12 SOVs to deenergize, the outboard MSIVs closed. This, in turn, generated an "MSIV not full open" RPS trip signal, and the reactor automatically scrammed. As immediate corrective action, the plant was taken to cold shutdown and an investigation into the cause of the event was commenced. The high resistance contact associated with the RPS channel 12-1 relay (contact L4-T4 in relay 12K74) was identified and the relay was replaced. The open electrical connections associated with the RPS channel 11 SOVs (10-03D and 01-04D) were identified and the associated EQ connectors were repaired; post-maintenance testing included measurement of electrical continuity through the connections. The issue was entered into the CAP for cause evaluation under CR 2010-11008.

Analysis. The inspectors determined that NMPNS's failure to adequately test the RPS channel 11 SOVs for the outboard MSIVs following their installation in April 2005 was a performance deficiency. Specifically, the failure to properly post-installation test the replacement SOVs in 2005 resulted in their inoperability and reduced reliability/redundancy of the MSIV isolation circuitry. The finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations. Additionally, the finding was similar to example 4.b in Appendix E of Inspection Manual Chapter (IMC) 0612, in that it resulted in a reactor scram. Using

IMC 0609, "Significance Determination Process," Table 4a, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the inspectors concluded that this finding warranted further evaluation, because the performance deficiency impacted the Initiating Events cornerstone and contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would be made unavailable.

A Region I senior reactor analyst (SRA) evaluated the safety significance of this finding using Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE), Model 8.15 and the Nine Mile Point Unit One Standardized Plant Analysis Risk (SPAR) model, Revision 8.16. Based upon the SAPHIRE 8 initiating event assessment, the risk significance of this finding was determined to be in the low E-7/yr range, or very low safety significance (Green). The SRA evaluated a plant transient (reactor trip with the initiating event frequency set to 1.0 vice its nominal value of 0.8/year) with coincident closure of the MSIVs (failure probability set to TRUE) to estimate the increase in core damage frequency associated with the finding. There was no significant external events contribution to risk for this event. As discussed above, operators did reopen and recover use of the main condenser for decay heat removal. No additional recovery credit was assigned for this operator action, indicating the calculated increase in core damage frequency for the event is conservatively high. The dominant core damage sequences involve anticipated transient without scram (ATWS) and coincident failure of safety relief valves to open to support automatic and operator actions to control reactor coolant pressure.

Since the calculated increase in core damage frequency was greater than  $1\text{E-}7/\text{yr}$ , this finding was screened for its potential risk contribution due to large early release frequency (LERF) using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." Using Table 5.2, the increase in LERF was approximated using a LERF multiplier of 0.3 (based upon the Unit 1 Mark I containment design) and the dominant core damage sequences involving ATWS. Consequently, the estimated increase in LERF was in the low E-8 range, or very low safety significance (Green). Accordingly, this finding is assigned a Green safety significance. The finding did not have a cross-cutting aspect because the performance deficiency did not occur within the past three years and therefore was not reflective of present performance.

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that, ". . . Instructions, procedures, or drawings shall include appropriate . . . acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to the above, in April 2005, the RPS channel 11 SOVs in the control air system for outboard MSIVs 01-03 and 01-04 were replaced, but the post-maintenance testing to cycle the MSIVs was not an appropriate acceptance criterion for determining that the replacements had been satisfactorily accomplished; specifically, the replaced RPS channel 11 SOVs were tested in combination with the RPS channel 12 SOVs, which allowed the open circuit in the EQ connectors for each of the replaced SOV to be masked. As a result, on November 10, 2010, when the RPS channel 12 SOVs in the control air system for MSIVs 01-03 and 01-04 unexpectedly deenergized during surveillance testing, the outboard MSIVs shut, which caused an automatic reactor scram. As immediate corrective action, the plant was taken to cold shutdown and an investigation into the cause of the event was commenced. Because

this violation was of very low safety significance and was entered into the CAP as CR 2010-11008, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. **(NCV 05000220/2010005-01, Reactor Scram due to Inadequate Post-Maintenance Testing)**

#### 4OA5 Other Activities

##### .1 Extended Power Uprate and Evaluation of Changes, Tests, or Experiments and Permanent Plant Modifications (71004 and 71111.17)

###### a. Inspection Scope

On May 27, 2009, NMPNS submitted a license amendment request (LAR) (ADAMS ML091610103) to increase Unit 2 licensed maximum thermal power level from 3467 megawatts-thermal (MWt) to 3988 MWt. The LAR is currently under NRC evaluation. The power uprate is a 15 percent increase and is considered an extended power uprate (EPU). EPUs require extensive system design margin and initiating event frequency safety analyses and evaluations. Additionally, EPUs typically require extensive modifications to balance of plant equipment. Inspection Procedure 71004, "Power Uprate," will be used to evaluate the onsite implementation of the Unit 2 EPU.

An inspection team reviewed the impact of EPU conditions on several system and component design margins to verify the capability of safety systems and components to perform their intended safety functions or in the case of balance of plant equipment, that the potential for increased likelihood of an initiating event was also appropriately evaluated. The selected components and change evaluations, and the details of the inspection scope, are documented in IRs 05000220/2010007 and 05000410/2010007, "NRC Evaluation of Changes, Tests, or Experiments and Permanent Plant Modifications Team Inspection Report."

###### b. Findings

No findings were identified.

##### .2 Independent Spent Fuel Storage Pad Installation (60853)

###### a. Inspection Scope

The inspectors reviewed construction documents and records associated with the construction of the independent spent fuel storage installation (ISFSI) pad at NMPNS. The inspectors discussed construction activities with cognizant personnel. The inspectors toured the construction site and witnessed work activities, such as placement and curing of concrete, installation of re-bar for future placements, and acceptance tests for delivered fresh concrete for placement in the pad. The inspectors verified that the construction details for the ISFSI pad met the specified design basis for the dry cask storage system selected for use at NMPNS. The inspectors also verified that the design specifications for the ISFSI pad were met in the construction documentation.

b. Findings

No findings were identified.

4OA6 Meetings

Exit Meeting

The inspectors presented the inspection results to Mr. Sam Belcher and other members of NMPNS management at the conclusion of the inspection on January 14, 2011. The inspectors asked NMPNS whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

**ATTACHMENT: SUPPLEMENTAL INFORMATION**

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

**NMPNS Personnel**

S. Belcher, Vice President  
J. Dosa, Director, Licensing  
R. Dean, Training Manager  
S. Dhar, Design Engineering  
J. Holton, Supervisor, Systems Engineering  
J. Kaminski, Director, Emergency Preparedness  
J. Krakuszeski, Manager, Operations  
M. Kunzwiler, Security Supervisor and Fatigue Rule Program Coordinator  
T. Lynch, Plant General Manager  
F. Payne, Unit 1 General Supervisor Operations  
M. Shanbhag, Licensing Engineer  
S. Sova, Radiation Protection Manager  
H. Strahley, Unit 2 General Supervisor Operations  
T. Syrell, Manager, Nuclear Safety and Security  
J. Vaughn, Operations Engineer

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

**Opened**

None.

**Opened and Closed**

05000220/2010005-01	NCV	Reactor Scram due to Inadequate Post-Maintenance Testing
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**Closed**

None.

**Discussed**

None.

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### Procedures

N1-SOP-33A.3, "Major 115 KV Grid Disturbances," Revision 01  
N1-OP-64, "Meteorological Monitoring," Revision 00300  
N2-OP-102, "Meteorological Monitoring," Revision 00900  
N1-EOP-5, "Secondary Containment Control," Revision 01400  
NAI-PSH-11, "Seasonal Readiness Program," Revision 06  
N2-OP-102, "Meteorological Monitoring," Revision 00500  
GAI-OPS-14, "Work Order Operational Impact Development and Approval," Revision 02000

#### Documents

End of Cycle Report, "Cycle Training Report for Operations," dated October 22, 2010  
Seasonal Readiness Weekly Status sheet, dated October 26, 2010  
Seasonal Readiness Certification Letter, dated October 29, 2010  
Unit 1 and 2 System Seasonal Readiness Evaluation - Diesel Generators, dated June 7, 2010

#### Condition Reports

2008-05085  
2009-00867  
2009-01014  
2010-00192  
2010-10831  
2010-11223

### **Section 1R04: Equipment Alignment**

#### Procedures

N1-OP-45, "Emergency Diesel Generators," Revision 02900  
N1-OP-2, "Core Spray System," Revision 03101  
N2-OP-31, "Residual Heat Removal System," Revision 02200  
N2-VLU-01, "Walkdown Order Valve Lineup and Valve Operations," Revision 00, Attachment 31, "N2-OP-31 Walkdown Valve Lineup"

#### Documents

SDBD-201, "Core Spray System," Revision 5

#### Drawings

P&ID C-18007-C, "Reactor Core Spray," Revision 58

#### Condition Reports

2009-01494  
2009-01582  
2009-02064

2010-11611  
2010-05339  
2009-01240  
2009-01259  
2010-02063  
2010-04512  
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**Section 1R05: Fire Protection**

Procedures

N1-FPI-PFP-0101, "Unit-1 Pre-Fire Plans," Revision 02  
N2-FPI-PFP-0201, "Unit 2 Pre-Fire Plans," Revision 02

Documents

NMPNS Unit 1 UFSAR, Appendix 10A, "Fire Hazards Analysis"  
NMPNS Unit 2 UFSAR, Appendix 9B, "Safe Shutdown Evaluation"

Condition Reports

2010-10298

**Section 1R07: Heat Sink Performance**

Procedures

N2-SOP-90, "Natural Events," Revision 300  
N2-SOP-11, "Loss or Degraded Service Water System," Revision 600  
N1-SOP-64, "High Winds," Revision 00  
N1-SOP-19, "Intake Structure Icing," Revision 03  
N1-SOP-18.1, "Service Water Failure/Low Intake Level," Revision 400  
N1-OP-18, "Service Water System," Revision 2600  
N1-OP-13, "Emergency Cooling System," Revision 3500  
N1-CTP-V938, "Treatment of Screen and Pump House Raw Water with Biocide," Revision 1200  
N1-CTP-V945, "Service Water Zebra Mussel Treatment," Revision 1100  
N2-CTP-GEN-@643, "EVAC Treatment of the Service Water System," Revision 05  
N2-CTP-SCT-D201, "SWP Chemical Treatment System," Revision 401  
N2-CTP-SWP-M610, "Service Water Biocide Addition Program Evaluation," Revision 00  
N2-OP-11, "Service Water System," Revision 901  
CNG-CA-1.01-1000, "Corrective Action Program," Revision 00400  
S-TDP-REL-0102, "Service Water Heat Exchanger and Component Inspection Guide," Revision 03  
S-TDP-REL-0103, "GL 89-13 Service Water System Problems Affecting Safety Related Equipment Program Plan," Revision 00  
N1-PM-@001, "Emergency Cooling Shell Level Test for Tube Integrity," Revision 00200 (Loop 12 test, completed March 19, 2009)  
N1-PM-@001, "Emergency Cooling Shell Level Test for Tube Integrity," Revision 00200 (Loop 11 test, completed March 19, 2009)

Program and System Health Reports

Nine Mile Point Unit 1, Service Water Reliability (GL 89-13) Program, Program Health Report  
(July 1, 2010 - September 30, 2010)  
Nine Mile Point Unit 2, Service Water Reliability (GL 89-13) Program, Program Health Report  
(July 1, 2010 - September 30, 2010)  
Nine Mile Point Unit 1, Emergency Cooling System, System Health Report (July 1, 2010 -  
September 30, 2010)  
Nine Mile Point Unit 2, Residual Heat Removal System, System Health Report (July 1, 2010 -  
September 30, 2010)

Drawings

EC-015F, Sheet 001, "Sections, Unit 2 Intake & Discharge Tunnels"  
EC-015E, Sheet 001, "Profile, Unit 2 Intake & Discharge Tunnels"  
EC-015D, Sheet 001, "General Arrangement, Unit 2 Intake & Discharge Tunnels"  
UFSAR, Figure III-19, "Circulating Water Channels under Screen and Pump House - Normal  
Operation"  
UFSAR, Figure III-20, "Circulating Water Channels under Screen and Pump House - Special  
Operations"  
UFSAR, Figure III-21, "Intake and Discharge - Tunnels Plan and Profile"

Design and Licensing Basis

NMP Unit 1 UFSAR Paragraph D, Section 1.0 and 2.0, "Service Water System"  
NMP Unit 2 UFSAR Section 1.2.10.4, "Ultimate Heat Sink"  
SDBD-204, "Emergency Cooling System"

Underwater Video Inspections Reviewed

Unit 1, SW Pump Bay "As Found", Emergency Diesel Raw Water pump, Fore Bay area,  
March 19, 2007  
Unit1, Core Spray Raw Water Pump Suction (Before Cleaning), March 24, 2007  
Unit1, Core Spray Raw Water Pump Suction (After Cleaning), March 26, 2007  
Unit1, Core Spray Raw Water Pump Suction (Before & After Cleaning), March 25, 2009  
Unit1, Remote Submersible Video of Discharge Tunnel (partial), February 18, 1995  
Unit 2, Intake Valves and Intake Structure (Before Cleaning), July 18, 2010  
Unit 2, Intake Valves and Intake Structure (After Cleaning), June 19, 2009

Engineering Calculations, Analyses, Specifications, and Design Changes

Unit 1, Scram 10-01, November 10, 2010, "Post Trip Review"  
Unit 1 Calculation SI5-72-F004, "Emergency Service Water System Hydraulic Analysis"

Unit 2 Extended Power Uprate Service Water Calculations and References

Sargent & Lundy Report SL-T0613, "Service Water (SWP) System, Nine Mile Point Unit 2"  
Sargent & Lundy Report SL-T0605, "Service Water (SWP) System, Nine Mile Point Unit 2"  
Sargent & Lundy Report SL-T0608, "Ultimate Heat Sink, Nine Mile Point Unit 2"  
Response to NRC RAI-F-12  
GE-Hitachi Project Task Report, Task T0310, "Residual Heat Removal System, Unit 2,  
Extended Power Uprate"



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2008-005254	2010-005305	2009-003710
2007-002295	2010-007687	2009-004467
2007-007243	2010-007774	2009-006314
2008-000173	2010-007992	2009-007516
2008-005512	2010-007995	2009-007519
2008-007384	2010-008092	2009-007542
2009-000076	2010-008911	2010-000546
2009-000433	2010-010810	2010-001105
2009-001695	2010-011763	2010-002194
2009-005524	2009-004435	2010-003397
2009-006314	2008-005252	2010-003505
2009-006437	2008-005250	2010-003588
2009-007516	2008-000240	2010-001184
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2010-004308	2008-007837	

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Inspection Report for Constellation Nuclear Group Nine Mile Point Nuclear Station N1R20, Unit  
1 Screen Well Inspections and Debris Removal; March-April 2009

Service Water Pump & Motor Bearing Vibration Data

Vibration Data File, 2SWP-P1A, November 17, 2010  
 Vibration Data File, 2SWP-P1B, November 17, 2010  
 Vibration Data File, 2SWP-P1C, November 17, 2010  
 Vibration Data File, 2SWP-P1D, November 17, 2010  
 Vibration Data File, 2SWP-P1E, November 17, 2010  
 Vibration Data File, 2SWP-P1F, November 17, 2010  
 Vibration Data File, Emergency Service Water Pump #11, November 18, 2010  
 Vibration Data File, Emergency Service Water Pump #12, November 18, 2010  
 Vibration Data File, Service Water Pump #11, November 18, 2010  
 Vibration Data File, Service Water Pump #12, November 18, 2010

Heat Exchanger Eddy Current Test Reports

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 HTX-79-04, November 17, 2009 (4 pages)  
 HTX-79-05, November 8, 2009 (4 pages)  
 HTX-79-06, December 8, 2009 (4 pages)  
 RBCLC #11, HTX-70-13R, December 17, 2008 (4 pages)  
 RBCLC #12, HTX-70-14R, October 21, 2010 (4 pages)  
 RBCLC #13, HTX-70-15R, November 5, 2010 (4 pages)  
 Residual Heat Removal HX-1A (2RHS\*E1A), April 21, 2010 (4 pages)  
 Residual Heat Removal HX-1B (2RHS\*E1B), March 30, 2006 (4 pages)  
 2HKV\*CHLIA, February 12, 2008 (4 pages)  
 2HKV\*CHLIB, October 5, 2007 (4 pages)  
 Diesel Water Jacket Cooler - 1A (2EGS\*E1A), April 22, 2010, (4 pages)

Diesel Water Jacket Cooler - 1B (2EGS\*E1B), April 8, 2010, (4 pages)  
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Diesel Water Jacket Cooler - 2B (2EGS\*E2B), April 8, 2010, (4 pages)  
2EGS\*E1C (Div III Diesel Jacket Water Cooler), September 16, 2006, (4 pages)

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Unit 1 Structural Monitoring Program, 2009 Biennial Report, July 9, 2010  
NMPNS-HX-001, "Generic Letter 89-13 Heat Exchanger Program Plan," Revision 03  
S-TDP-REL-0102, "Service Water Heat Exchanger and Component Inspection Guide,"  
Revision 3  
S-TDP-REL-0103, "GL 89-13 Service Water System Problems Affecting Safety-Related  
Equipment Program Plan," Revision 00

Miscellaneous Documents

Niagara Mohawk Power Corporation Letter NMPIL 0282, dated July 7, 1988; Niagara Mohawk  
Response to NRC Bulletin 88-04 for Nine Mile Point Unit 1  
Niagara Mohawk Power Corporation Letter NMP2L 1172, dated September 30, 1988; Niagara  
Mohawk Response to NRC Bulletin 88-04 for Nine Mile Point Unit 2

NRC Documents

GL 89-13, "Service Water System Problems Affecting Safety-Related Equipment"

**Section 1R11: Licensed Operator Regualification Program**

Procedures

N1-SOP-28, "Seismic Event," Revision 02  
N1-SOP-31.2, "Pressure Regulator Malfunction," Revision 01000  
N1-EOP-1, "RPV Control," Revision 01400  
N1-EOP-3, "Failure to Scram," Revision 01700  
N1-EOP-4, "Primary Containment Control," Revision 01400  
N1-EOP-8, "RPV Blowdown," Revision 01000  
N2-SOP-06, "Feedwater Failures," Revision 00600  
N2-SOP-101D, "Rapid Power Reduction," Revision 00700  
N2-SOP-29, "Sudden Reduction in Core Flow," Revision 00900  
N2-SOP-29.1, "Reactor Recirculation Pump Seal Failure," Revision 01  
N2-EOP-RPV, "RPV Control," Revision 01300  
N2-EOP-06, "NMP2 EOP Support Procedure," Attachment 13, "RRCS Manual Initiation,"  
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N2-EOP-C5, "Failure to Scram," Revision 01200  
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Documents

CNG-TR-1.01-1013, "Licensed Operator Requalification Exam Program", Revision 00100  
CNG-TR-1.01-1021, "Licensed Operator Requalification Training Program", Revision 00000  
NMP-TR-1.01-70, "Training Administration", Revision 00700  
NMP-TR-1.01-102, "Licensed Operator Requalification Training Program", Revision 01100

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DR 09-032, "RPV Level Response on Reactor Trip"  
DR 09-096, "Power Response to Lowering Level on ATWS"  
DR 09-121, "CREVS Does Not Start When Both RP12B and RP13B Inserted"  
DR 10-003, "Drywell Pressure Response to Open ERV"  
DR 10-027, "Idle Recirc Loop Flow Lower in the Plant"  
DR 10-038, "ECP 10-00039 Adds SFP HX Temperature Computer Points"  
DR 10-043, "CRD Temperature Responds to Lake Temp Change"  
DR 10-044, "Malf PC04 Torus Leak Response"  
DR 10-072, "Core Spray Valves Opened with Jumpers Installed"  
DR 10-078, "Swapping CRD Pumps Affects Reactor Power"  
DR 10-080, "RRP-11 Controller Response Shifting to Manual"  
DR 10-087, "Malf RR29 Recirc Loop Leak"

Simulator Testing

2010 Simulator Comparison Test 1-10-001, "Power Change with Recirc Flow"  
2010 Simulator Comparison Test 1-10-003, "Power Change with Rod Moves"  
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2009 Computer Operating Limits Exceeded Test  
2009 Steady State, Core Testing & Normal Tests  
2009 Manual Reactor Scram Transient Test  
2009 Simultaneous Trip of All Feedwater Pumps Transient Test  
2009 Simultaneous Closure of All MSIVs Transient Test

Condition Reports

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**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedures

CNG-OP-4.01-1000, "Integrated Risk Management," Revision 00600  
CNG-MN-4.01-1004, "On-Line T-Week Process," Revision 00100  
CNG-MN-4.01-1006, "Online Schedule Management," Revision 00100  
N2-OSP-EGS-R006, "Operating Cycle Diesel Generator 24 Hour Run and Load Rejection Test  
Division III," Revision 00600  
N2-SOP-68, "Generator Auxiliaries Failures," Revision 02

Condition Reports

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2010-10391  
2010-10579

**Section 1R15: Operability Evaluations**

Procedures

CNG-OP-1.01-1002, "Conduct of Operability Determinations / Functionality Assessments,"  
Revision 00101  
CNG-CA-1.01-1005, "Apparent Cause Evaluations," Revision 00400

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S15-79-HTX04, "Thermal Performance Evaluation for the Unit 1 Emergency Diesel Generator  
(EDG) Jacket Water Coolers," Revision 00.00

Drawings

C-19432-C, "Elementary Wiring Diagram 600 Volt Power Board 151 Control Circuits,"  
Revision 23

Condition Reports

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**Section 1R18: Plant Modifications**

Procedures

N2-OP-33, "High Pressure Core Spray System," Revision 01000  
N2-SOP-03, "Loss of AC Power," Revision 01000  
N2-RESP-4, "LPRM Calibration," Revision 06  
CNG-FES-015, "Design Engineering And Configuration Management Forms," Revision 00003

Documents

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A10.1-N-420, "HPCS Diesel Cooling Water Cross -Tie: Steady State Hydraulic Analysis,"  
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CENG letter dated March 30, 2010, "License Amendment Request Pursuant to 10 CFR 50.90:  
Extension of the Completion Time for an Inoperable Diesel Generator – Technical  
Specification 3.8.1, AC Sources - Operating"  
ECP-10-000291, "HPCS Diesel Cooling Water Cross-Tie to Fire Water for PRA Improvement,"  
Revision 0000  
OP-319DT, "2-SWP-004-972-4, 2-SWP-004-973-3," Revision 1  
PX-89068, "HPCS Diesel Cooling Water Cross-Tie Pipe Stress Analysis," Revision 00  
ECP-10-000698, "Install a Jumper Across the Indexer Limit Switch S2 in the Indexing  
Mechanism of the Transversing In-core Probe (TIP)," Revision 0000  
Vendor Technical Manual N2G08000MISI-008, "Drive Control Unit 157C4769G014 Operation  
and Maintenance Instructions," Revision 0

Drawings

PID-11L-22, "Piping & Instrumentation Diagram Service Water System," Revision 22

PID-34F, "Piping & Instrumentation Diagram Fire Protection - Water," Revision 16  
Pump Curve for the Unit 2 Diesel Fire Pump  
Vendor Technical Manual Drawing 793E654

Work Orders

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Condition Reports

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**Section 1R19: Post-Maintenance Testing**

Procedures

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N1-OP-45, "Emergency Diesel Generators," Revision 03100  
N1-ST-06A, "Containment Spray Loop 111 Quarterly Operability Test," Revision 00801

Condition Reports

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**Section 1R22: Surveillance Testing**

Procedures

GAP-SAT-01, "Surveillance Test Program," Revision 01700  
CNG-HU-1.01-1000, "Human Performance," Revision 00300  
CNG-HU-1.01-1001, "Human Performance Tools and Verification Practices," Revision 00500  
CNG-HU-1.01-1002, "Pre-Job Briefings and Post-Job Critiques," Revision 00300  
CNG-OP-4.01-1000, "Integrated Risk Management," Revision 00600

Drawings

P&ID C-18047-C, "Control Room Heating Ventilation & Air Conditioning System," Revision 37

Condition Reports

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**Section 2RS4: Occupational Dose Assessment**

Procedures

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Documents

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Documents

Focused Self-Assessment Report SA-2010-000041  
QP&A Assessment Report 10-057, "Radioactive Waste Shipping Program"  
AREVA NP Environmental Laboratory 10 CFR Part 61 Analysis Reports for: Dry Active Waste (Unit 1/Unit 2); Condensate Resin (Unit 1/Unit 2); Filter Sludge (Unit 1); Reactor Water Clean-up (Unit 1); Carbon Vessel (Unit 1); Powdex (Unit 2)  
Radioactive Material Shipments: 10-1141; 10-2024; 10-2052; 10-2065; 10-2066  
Training Lesson Plan NS202RPT004Q01, "Movement/Storage of RAM"  
Quality Assurance Audits: CHE-09-01-N, "Chemistry Program; RPP-09-01-N, "Radiation Protection"

**Section 4OA1: Performance Indicator Verification**

Documents

2009/2010 MSPI Submittal Data for Unit 2  
EAI-IRG-SENG-001, "Mitigating System Performance Index (MSPI) Unavailability and Reliability Data to NRC/INPO/WANO"  
NMP2-MSPI-2, "Nine Mile Point Unit 2 MSPI Basis Document," Revision 07  
NMPNS Service Water Pump Operability Assessment  
NRC Inspection Report 05000410/2010006  
NRC MSPI Report for Nine Mile Point Unit 2  
PCR-09-06854  
CA-2009-002849

Condition Reports

2009-07708  
2010-01410  
2010-02599  
2010-06014  
2010-06344  
2010-06680  
2010-09089

**Section 4OA2: Problem Identification and Resolution**

Procedures

CNG-MN-4.01-1002, "Work Order Initiation, Screening and Prioritization," Revision 00100  
NAI-REL-02, "Control of Operator Workarounds and Burdens," Revision 8  
N1-MFT-104, "Modification Test for MOD N1-06-023 FCV-29-134 Actuator," Revision 00100  
N2-OP-31, "Residual Heat Removal System," Revision 02200  
N2-SOP-03, "Loss of AC Power," Revision 01000

Documents

DD21259, "Kit Q.T. CV7 Remote Mounting," Revision D

LTAM Issue #NMP-10-0400, "Unit 1 #13 FW Quick Trak Controller Changes,"  
Operator Workaround and Burdens Program Aggregate Impact Review, June 8, 2010 and  
August 30, 2010

## Quick Trak Positioner User Manual

## Units 1 and 2 Operational Focus Indices

## Units 1 and 2 Operator Burden Lists

## Units 1 and 2 Operator Workaround Lists

## Units 1 and 2 Shift Turnover Checklist/Information Sheets

2101-205000C01, Student Guide for Residual Heat Removal System, Revision 0.0

## NRC IN 87-10, Potential for Water Hammer During Restart of Residual Heat Removal Pumps

GEK-83337B, "Residual Heat Removal System," dated October 11, 1995

Audit OPS-10-01-N, "Nuclear Operations Program", dated October 18, 2010

## Drawings

PID-31A, "Residual Heat Removal," Revision 21

PID-31B, "Residual Heat Removal," Revision 19

PID-31C, "Residual Heat Removal," Revision 15

PID-31D, "Residual Heat Removal," Revision 21

PID-31E, "Residual Heat Removal," Revision 21

PID-31F, "Residual Heat Removal," Revision 16

PID-31G, "Residual Heat Removal," Revision 15

## Work Orders

C090108100

## Condition Reports

2009-06370

2009-08503

2010-09443

2009-00858

2009-00548

2009-00917

2009-02238

2009-01000

2009-03465

2009-01001

2009-07964

1999-02651

2009-08395

1997-01875

### Section 40A5: Other Activities

## Documents

### Northern Ready Mix: Lean Concrete Mix Design for 3000 psi concrete with and without retarders

## Northern Ready Mix: Lean Concrete Mix Design for 4000 psi concrete with and without retarders

Northern Ready Mix: Lean Concrete Mix Design for 4000 psi concrete with Pozzoloth R  
Atlantic Testing Laboratory Field Concrete Test Report ST 3080C for Pads FA-1 (A1, A2, A3;  
B1 and B3)

Atlantic Testing Laboratory Report ST 3085-E-09-08-10, "Bedrock Inspection by Geo Tech Engineer for Pad F1, B1, and B3"

A-12

Drawings

NMP ISFSI Drawing No. 2010135, Revision Site A Plan, ISFSI Foundations

NMP ECP 09-000252, Engineering Change Request, Revision 000

NMP ECPN - 01 through 03, and Supplements

NMP ISFISI Drawings C-101, - 301, -302, -401, -402, -501, -502, -601, -602, -603, -701, -702,  
-801, -802, -803, -804, -805, -806, -807, and -901



**LIST OF ACRONYMS**

AC	alternating current
ADAMS	Agencywide Documents Access and Management System
ARI	alternate rod insertion
ASME	American Society of Mechanical Engineers
ATWS	anticipated transient without scram
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
DAC	derived air concentration
DBD	design basis document
EC	emergency condenser
ECP	engineering change package
EDG	emergency diesel generator
EOP	emergency operating procedure
EPU	extended power uprate
EQ	environmentally qualified
GL	Generic Letter
HPCI	high pressure coolant injection
HPCS	high pressure core spray
IMC	Inspection Manual Chapter
ISFSI	independent spent fuel storage Installation
JPM	job performance measure
kV	kilovolt
LAR	license amendment request
LDE	lens dose equivalent
LER	licensee event report
LERF	large early release frequency
LOCA	loss-of-coolant accident
LOOP	loss of offsite power
LORT	licensed operator requalification training
MDA	minimum detectable activity
MG	motor-generator
mrad	millirad
mrem	millirem
MSIV	main steam isolation valve
MSPI	mitigating system performance index
MWt	megawatts-thermal
NCV	non-cited violation
NEI	Nuclear Energy Institute
NMPNS	Nine Mile Point Nuclear Station
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PCP	process control program
PI	performance indicator

PMT	post-maintenance test
QA	quality assurance
qtr	quarter
R/hr	rad per hour
RB	reactor building
RCS	reactor coolant system
RCIC	reactor core isolation cooling
RFP	reactor feedwater pump
RHR	residual heat removal
RPS	reactor protection system
RPV	reactor pressure vessel
RRCS	redundant reactivity control system
RTP	rated thermal power
SAPHIRE	systems analysis programs for hands-on integrated reliability evaluations
SDE	skin dose equivalent
SDP	significance determination process
SLC	standby liquid control
SOP	special operating procedure
SOV	solenoid operated valve
SPAR	standardized plant analysis risk
SRA	senior reactor analyst
ST	surveillance test
SW	service water
TEDE	total effective dose equivalent
TIP	traversing in-core probe
TS	technical specification
UFSAR	updated final safety analysis report
WO	work order